

CLAIMS

What Is Claimed Is:

1. A computer controlled display device, comprising:

a flat panel display having an input for receiving display data; and
a moveable assembly coupled to said display, said moveable assembly providing
at least three degrees of freedom of movement for said flat panel display device and
having a cross-sectional area which is substantially less than a cross-sectional area of a
display structure of said flat panel display, wherein said moveable assembly comprises
a plurality of stacked ball-and-socket assemblies.

2. The computer controlled display device of Claim 1 wherein said moveable assembly
is snakelike and changes positions in a smooth manner.

3. The computer controlled display device of Claim 1 wherein said flat panel display
device is moveable by a user when said moveable assembly is in a rigid position.

4. The computer controlled display device of Claim 1 wherein said moveable assembly
is a moveable tubular structure.

5. The computer controlled display device of Claim 1 wherein located within said
moveable assembly is one of a data cable, a power cable, a tension mechanism, and a
anti-torsion mechanism.

6. The computer controlled display device of Claim 1 wherein said moveable assembly comprises a region of substantial friction and a region of lesser friction.

7. The computer controlled display device of Claim 6 wherein said region of substantial friction comprises at least one ball-and-socket assembly located proximate a base coupled to said moveable assembly.

8. The computer controlled display device of Claim 6 wherein said region of lesser friction comprises at least one ball-and-socket assembly located proximate said flat panel display device.

9. The computer controlled display device of Claim 1 wherein a ball-and-socket assembly of said plurality of stacked ball-and-socket assemblies comprises:

a substantially spherical ball;

a first annular plunger, said first annular plunger having walls defining a bore therethrough, and having a first concave insert fitted therein; and

a second annular plunger, said second annular plunger having walls defining a bore therethrough, and having a second concave insert fitted therein, said second concave insert coupled to said first concave insert.

10. The ball-and-socket assembly as in Claim 9 wherein said assembly is comprised of a material selected from the group consisting of a metal, a metal alloy, a ceramic, a plastic, and combinations thereof.

11. The ball-and-socket assembly as in Claim 9 wherein said ball is comprised of aluminum.
12. The ball-and-socket assembly as in Claim 9 wherein said ball is comprised of stainless steel.
13. The ball-and-socket assembly as in Claim 9 wherein said ball has a flattened first end and a flattened second end, a bore extending through the center of the ball from said first end to said second end, and an interior cable guide portion located within said bore.
14. The ball-and-socket assembly as in Claim 13 wherein said ball has a convex cosmetic surface and a convex contact surface, said convex cosmetic surface supported by one of said first or second annular plunger, said convex contact surface being positioned with an edge substantially adjacent to a flattened end of said ball.
15. The ball-and-socket assembly as in Claim 13 wherein said interior cable guide defines a central bore and a plurality of off-centered openings, said central bore to house a tension device, said plurality of off-centered openings to house a data cable and an anti-torsion device.
16. The ball-and-socket assembly as in Claim 15, further comprising:

a resilient mechanism operatively coupled with said first and second plungers to space said plungers apart until compressed.

17. The ball-and-socket assembly as in Claim 9 wherein said ball has a convex cosmetic surface and a convex contact surface, said convex cosmetic surface supported by one of said first or second annular plunger when said resilient mechanism is in an expanded state such that said convex contact surface breaks contact with one of said first or second concave insert, said convex contact surface being positioned with an edge substantially adjacent to a flattened end of said ball.

18. The ball-and-socket assembly as in Claim 17 wherein said convex contact surface contacts said concave insert when said resilient mechanism is compressed.

19. The ball-and-socket assembly as in Claim 17 wherein said convex contact surface has a thickness measured from an outer surface of said convex contact surface to an outer surface of said convex cosmetic surface, said thickness to limit an angle at which said ball can be rotated from a longitudinal axis centrally extending through said bore by contacting an interior annular lip on said annular plunger.

20. The ball-and-socket assembly as in Claim 17 wherein said convex contact surface is comprised of the same material as said ball.

21. The ball-and-socket assembly as in Claim 17 wherein said convex contact surface is comprised of a material different than a material comprising said ball.

22. The ball-and-socket assembly as in Claim 17 wherein said convex contact surface comprises a ceramic filled plastic.

23. The ball-and-socket assembly as in Claim 17 wherein said convex contact surface is manufactured to have an increased friction.

24. The ball-and-socket assembly as in Claim 23 wherein said convex contact surface has a coating comprising a granular material.

25. The ball-and-socket assembly as in Claim 24 wherein said granular material is selected from the group consisting of silica, tungsten carbide, and aluminum oxide.

26. The ball-and-socket assembly as in Claim 16 wherein said resilient mechanism is a wave spring.

27. The ball-and-socket assembly as in Claim 9 wherein said ball is a termination ball, said termination ball having a flattened base portion on one end, a convex contact surface on an opposite end, a bore extending through said termination ball from said one end to said opposite end, and a cable guide positioned within said bore, said base

portion having a fastening mechanism therein to fasten said termination ball to a structure.

28. The ball-and-socket assembly as in Claim 27 wherein said structure is said flat panel display.

29. The ball-and-socket assembly as in Claim 9 wherein a ball stop located on one of said first or second annular plunger limits ball tilt to approximately 15 degrees off of center.

30. A computer controlled display device, comprising:

a flat panel display device having an input for receiving display data;

a moveable assembly coupled to said display, said moveable assembly providing at least three degrees of freedom of movement for said flat panel display device and having a cross-sectional area which is substantially less than a cross-sectional area of a display structure of said flat panel display, wherein said moveable assembly comprises a plurality of stacked ball-and-socket assemblies; and

a tension device located within said moveable assembly and operatively coupled with an end of said moveable assembly, said tension device suspending movement of said moveable assembly when a force (e.g. tension) is applied to said tension device and permitting said movement when said force is lessened.

31. The computer controlled display device of Claim 30 wherein said tension device is a cable having a proximal end coupled with an actuator assembly and a distal end coupled with a termination ball.

32. The computer controlled display device of Claim 30 wherein said tension is in the range of approximately 180.0 to approximately 400.0 pounds.

33. The computer controlled display device of Claim 30 wherein one of a cable to provide display data, a tension device, and an anti-torsion device is located within said moveable assembly.

34. The computer controlled display device of Claim 30 wherein said moveable assembly comprises a region of substantial friction and a region of lesser friction.

35. The computer controlled display device of Claim 34 wherein said region of lesser friction comprises at least one ball-and-socket assembly located near said flat panel display.

36. The computer controlled display device of Claim 30 wherein a ball-and-socket assembly of said plurality of assemblies, comprises:

a substantially spherical ball;

a first annular plunger, said first annular plunger having walls defining a bore therethrough, and having a first concave insert fitted therein; and

a second annular plunger, said second annular plunger having walls defining a bore therethrough, and having a second concave insert fitted therein, said second concave insert coupled to said first concave insert.

37. The ball-and-socket assembly as in Claim 36 wherein said assembly is comprised of a material selected from the group consisting of a metal, a metal alloy, a ceramic, a plastic, and combinations thereof.

38. The ball-and-socket assembly as in Claim 37 wherein said ball has a flattened first end and a flattened second end, a bore extending through the center of the ball from said first end to said second end, and an interior cable guide portion located within said bore.

39. The ball-and-socket assembly as in Claim 38 wherein said ball has a convex cosmetic surface and a convex contact surface, said convex cosmetic surface supported by one of said first or second plunger, said convex contact surface being positioned with an edge substantially adjacent to a flattened end of said ball.

40. The ball-and-socket assembly as in Claim 38, wherein said interior cable guide defines a central bore and a plurality of off-centered openings, said central bore to house a tension device, said plurality of off-centered openings to house a data cable and an anti-torsion device.

41. The ball-and-socket assembly as in Claim 40 wherein said tension device is a cable having a fixed path length and running through said central bore of said interior cable guide.

42. A computer controlled display device, comprising:

a flat panel display having an input for receiving display data;

a moveable assembly coupled to said display, said moveable assembly providing at least three degrees of freedom of movement for said flat panel display device and having a cross-sectional area which is substantially less than a cross-sectional area of a display structure of said flat panel display; and

a moveable base coupled with said moveable assembly to support positioning of said moveable assembly and said flat panel display.

43. The computer controlled display device of Claim 42 wherein said moveable base is a computer.

44. The computer controlled display device of Claim 42 wherein said moveable base acts as a counterweight relative to said moveable assembly and to said flat panel display.

45. The computer controlled display device of Claim 42 wherein one of a cable to provide display data, a tension device, and an anti-torsion device is located within said moveable assembly.

46. The computer controlled display device of Claim 42 wherein said moveable assembly comprises a region of substantial friction and a region of lesser friction.

47. The computer controlled display device of Claim 42 wherein said moveable assembly comprises a plurality of stacked ball-and-socket assemblies.

48. The computer controlled display device of Claim 42 wherein said moveable assembly is snakelike and changes positions in a smooth manner.

49. A computer controlled display device, comprising:

a flat panel display device having an input for receiving display data;

a moveable assembly coupled to said display, said moveable assembly providing at least three degrees of freedom of movement for said flat panel display device and having a cross-sectional area which is substantially less than a cross-sectional area of a display structure of said flat panel display; and

an actuator assembly coupled with said flat panel display, said actuator moveable between a first position and a second position, said actuator operatively coupled with a tension device to apply a force to said tension device when said actuator occupies said first position, and to lessen said force when said actuator occupies said second position.

50. The computer controlled display device of Claim 49 wherein said actuator is on said flat panel display device.

51. The computer controlled display device of Claim 49 wherein said tension device is a cable having a fixed path length.

52. The computer controlled display device of Claim 49 wherein said actuator assembly comprises:

a tongue;

a crank coupled with said tongue, said crank having a detachable handle;

a strut coupled with said crank; and

a spring shaft coupled with said strut and with a resilient mechanism.

53. The computer controlled display device of Claim 52 wherein said resilient mechanism is selected from the group consisting of a piston and a spring.

54. The computer controlled display device of Claim 52 further comprising:

an actuator housing to house and to support said tongue, crank, strut, and spring shaft.

55. The computer controlled display device of Claim 52 wherein said resilient mechanism provides a restoring force of approximately 180.0 to approximately 200.0 pounds.

56. The computer controlled display device of Claim 52 wherein said tongue comprises a material selected from the group consisting of aluminum, stainless steel, plastic, and ceramic filled plastic.

57. The computer controlled display device of Claim 52 wherein said crank comprises a material selected from the group consisting of aluminum, stainless steel, plastic, and ceramic filled plastic.

58. The computer controlled display device of Claim 52 wherein said detachable handle comprises a material selected from the group consisting of aluminum, stainless steel, plastic, and ceramic filled plastic.

59. The computer controlled display device of Claim 52 wherein said strut comprises a material selected from the group consisting of aluminum, stainless steel, plastic, and ceramic filled plastic.

60. The computer controlled display device of Claim 52 wherein said spring shaft comprises a material selected from the group consisting of aluminum, stainless steel, plastic, and ceramic filled plastic.

61. The computer controlled display device of Claim 54 wherein said actuator housing comprises a material selected from the group consisting of aluminum, stainless steel, plastic, and ceramic filled plastic.

62. The computer controlled display device of Claim 52 wherein one of a data cable, said tension device, and an anti-torsion device is located within said moveable assembly.

63. The computer controlled display device of Claim 49 wherein said moveable assembly comprises a region of substantial friction and a region of lesser friction.

64. The computer controlled display device of Claim 49 wherein said moveable assembly comprises a plurality of stacked ball-and-socket assemblies.

65. The computer controlled display device of Claim 49 wherein said moveable assembly is snakelike and changes positions in a smooth manner.

66. A computer controlled display device, comprising:

a flat panel display having an input for receiving display data;

a moveable assembly coupled to said display, said moveable assembly providing at least three degrees of freedom of movement for said flat panel display device and having a cross-sectional area which is substantially less than a cross-sectional area of a display structure of said flat panel display; and

a cable to provide display data, said cable located within said moveable assembly, a first end of said cable operatively coupled with said input of said flat panel display, a second end of said cable operatively coupled with a computer system.

67. The computer controlled display device of Claim 66 wherein said moveable assembly comprises a plurality of stacked ball-and-socket assemblies.

68. The computer controlled display device of Claim 66 wherein a ball-and-socket assembly of said plurality of assemblies, comprises:

a substantially spherical ball;

a first annular plunger, said first plunger having walls defining a bore therethrough, and having a first concave insert fittable therein; and

a second annular plunger, said second plunger having walls defining a bore therethrough, and having a second concave insert fittable therein, said second concave insert coupled to said first concave insert.

69. The ball-and-socket assembly as in Claim 68 wherein said ball-and-socket assembly is comprised of a material selected from the group consisting of a metal, a metal alloy, a ceramic, a plastic, and combinations thereof.

70. The ball-and-socket assembly as in Claim 68 wherein said ball is comprised of aluminum.

71. The ball-and-socket assembly as in Claim 68 wherein said ball is comprised of stainless steel.

72. The ball-and-socket assembly as in Claim 69 wherein said ball has a flattened first end and a flattened second end, a bore extending through the center of the ball from said first end to said second end, and an interior cable guide portion located within said bore.

73. The ball-and-socket assembly as in Claim 68 wherein said ball has a convex cosmetic surface and a convex contact surface, said convex cosmetic surface supported by one of said first or second plunger, said convex contact surface being positioned with an edge substantially adjacent to a flattened end of said ball.

74. The ball-and-socket assembly as in Claim 68, wherein said interior cable guide defines a central bore and a plurality of off-centered openings, said central bore to house a tension device, said plurality of off-centered openings to house a data cable and an anti-torsion device.

75. The ball-and-socket assembly as in Claim 74 wherein said data cable runs through a said plurality of off-center openings of said interior cable guide.

76. The ball-and-socket assembly as in Claim 74 wherein said cable to display data has a length approximately 20% longer than a fixed path length of said moveable assembly, said fixed path length measured from an exterior portion of said flat panel display to an exterior portion of a support structure coupled to said moveable assembly.

77. The computer controlled display device of Claim 66 wherein said moveable assembly comprises a region of substantial friction and a region of lesser friction.

78. The computer controlled display device of Claim 66 wherein said moveable assembly is snakelike and changes positions in a smooth manner.

79. The computer controlled display device of Claim 66 wherein at least one of a tension device and an anti-torsion device is located within said moveable assembly.

Surf A ~~80. A computer controlled display device, comprising:~~

~~a flat panel display having an input for receiving display data;~~

~~a moveable assembly coupled to said display, said moveable assembly providing at least three degrees of freedom of movement for said flat panel display device and having a cross-sectional area which is substantially less than a cross-sectional area of a display structure of said flat panel display; and~~

~~an anti-torsion device located within said moveable assembly to prevent a cable located within said moveable assembly from being rendered inoperable.~~

81. The computer controlled display device of Claim 80 wherein said cable is a data cable or a tension cable.

82. The computer controlled display device of Claim 80 wherein said moveable assembly comprises a region of substantial friction and a region of lesser friction.

83. The computer controlled display device of Claim 80 wherein said moveable assembly is snakelike and changes positions in a smooth manner.

84. The computer controlled display device of Claim 80 wherein said moveable assembly comprises a plurality of stacked ball-and-socket assemblies.

85. The computer controlled display device of Claim 80 wherein a ball-and-socket assembly of said plurality of assemblies, comprises:

a substantially spherical ball;

a first annular plunger, said first annular plunger having walls defining a bore therethrough, and having a first concave insert fitted therein; and

a second annular plunger, said second annular plunger having walls defining a bore therethrough, and having a second concave insert fitted therein, said second concave insert coupled to said first concave insert.

86. The ball-and-socket assembly as in Claim 80 wherein said assembly is comprised of a material selected from the group consisting of a metal, a metal alloy, a ceramic, a plastic, and combinations thereof.

87. The ball-and-socket assembly as in Claim 85 wherein said ball has a flattened first end and a flattened second end, a bore extending through the center of the ball from said first end to said second end, and an interior cable guide located within said bore.

88. The ball-and-socket assembly as in Claim 85 wherein said ball has a convex cosmetic surface and a convex contact surface, said convex cosmetic surface

supported by one of said first or second plunger, said convex contact surface being positioned with an edge substantially adjacent to a flattened end of said ball.

89. The ball-and-socket assembly as in Claim 87, wherein said interior cable guide defines a central bore and a plurality of off-centered openings, said central bore to house a tension device, said plurality of off-centered openings to house a data cable and said anti-torsion device.

90. The ball-and-socket assembly as in Claim 89 wherein said anti-torsion device is a looped cable running through a said off-center portion of said interior cable guide.

91. The ball-and-socket assembly as in Claim 90 wherein said looped cable has a length approximately 20% longer than a fixed path length of said moveable assembly, said fixed path length measured from an exterior portion of said flat panel display to an exterior portion of a support structure coupled to said moveable assembly.

92. A computer controlled display device, comprising:

a flat panel display having an input for receiving display data;
a moveable assembly coupled with said display, said moveable assembly providing at least three degrees of freedom of movement for said flat panel display device and having a cross-sectional area which is substantially less than a cross-sectional area of a display structure of said flat panel display;

a cable to provide display data, said cable located within said moveable assembly, a first end of said cable operatively coupled with said input of said flat panel display, a second end of said cable operatively coupled with a computer system;

a tension device located within said moveable assembly and operatively coupled with an end of said moveable assembly, said tension device suspending movement of said moveable assembly when a force is applied to said tension device and permitting said movement when said force is lessened;

an anti-torsion device located within said moveable assembly to prevent said cable from being rendered inoperable; and

an actuator assembly coupled with said flat panel display, said actuator moveable between a first position and a second position, said actuator operatively coupled with said tension device to apply a force to said tension device when said actuator occupies said first position, and to lessen said force when said actuator occupies said second position.

93. The computer controlled display device of Claim 92 wherein said moveable assembly is snakelike and changes positions in a smooth manner.

94. The computer controlled display device of Claim 92 wherein said flat panel display comprises a liquid crystal display screen.

95. The computer controlled display device of Claim 92 wherein said input is a wireless port.

96. The computer controlled display device of Claim 92 wherein said flat panel display is moveable by a user when said moveable assembly is in a stable position.

97. The computer controlled display device of Claim 92 wherein said moveable assembly is a moveable tubular structure.

98. The computer controlled display device of Claim 92 wherein one of said data cable, said tension device, and said anti-torsion device is located within said moveable assembly.

99. The computer controlled display device of Claim 92 wherein said moveable assembly comprises a region of substantial friction and a region of lesser friction.

100. The computer controlled display device of Claim 99 wherein said region of substantial friction comprises at least one ball-and-socket assembly located near a support structure coupled to said moveable assembly.

101. The computer controlled display device of Claim 99 wherein said region of lesser friction comprises at least one ball-and-socket assembly located near said flat panel display.

102. The computer controlled display device of Claim 92 wherein said moveable assembly comprises a plurality of stacked ball-and-socket assemblies.

103. The computer controlled display device of Claim 102 wherein a ball-and-socket assembly of said plurality of assemblies comprises:

a substantially spherical ball;

a first annular plunger, said first annular plunger having walls defining a bore therethrough, and having a first concave insert fitted therein; and

a second annular plunger, said second annular plunger having walls defining a bore therethrough, and having a second concave insert fitted therein, said second concave insert coupled to said first concave insert.

104. The ball-and-socket assembly as in Claim 103 wherein said ball-and-socket assembly is comprised of a material selected from the group consisting of a metal, a metal alloy, a ceramic, a plastic, and combinations thereof.

105. The ball-and-socket assembly as in Claim 103 wherein said ball is comprised of aluminum.

106. The ball-and-socket assembly as in Claim 103 wherein said ball is comprised of stainless steel.

107. The ball-and-socket assembly as in Claim 103 wherein said ball has a flattened first end and a flattened second end, a bore extending through the center of the ball from said first end to said second end, and an interior cable guide portion located within said bore.

108. The ball-and-socket assembly as in Claim 103 wherein said ball has a convex cosmetic surface and a convex contact surface, said convex cosmetic surface supported by one of said first or second annular plunger, said convex contact surface being positioned with an edge substantially adjacent to a flattened end of said ball.

109. The ball-and-socket assembly as in Claim 107 wherein said interior cable guide defines a central bore and a plurality of off-centered openings, said central bore to house a tension device, said plurality of off-centered openings to house a data cable and an anti-torsion device.

110. The ball-and-socket assembly as in Claim 92, further comprising:
a resilient mechanism operatively coupled with said first and second plungers to space said plungers apart until compressed.

111. The ball-and-socket assembly as in Claim 110 wherein said ball has a convex cosmetic surface and a convex contact surface, said convex cosmetic surface supported by one of said first or second annular plunger when said resilient mechanism is in an expanded state such that said convex contact surface breaks contact with one

of said first or second concave insert, said convex contact surface being positioned with an edge substantially adjacent to a flattened end of said ball.

112. The ball-and-socket assembly as in Claim 111 wherein said convex contact surface contacts said concave insert when said resilient mechanism is compressed.

113. The ball-and-socket assembly as in Claim 111 wherein said convex contact surface has a thickness measured from an outer surface of said convex contact surface to an outer surface of said convex cosmetic surface, said thickness to limit an angle at which said ball can be rotated from a longitudinal axis centrally extending through said bore by contacting an interior annular lip on said annular plunger.

114. The ball-and-socket assembly as in Claim 111 wherein said convex contact surface is comprised of the same material as said ball.

115. The ball-and-socket assembly as in Claim 111 wherein said convex contact surface is comprised of a material different than a material comprising said ball.

116. The ball-and-socket assembly as in Claim 111 wherein said convex contact surface comprises a ceramic filled plastic.

117. The ball-and-socket assembly as in Claim 111 wherein said convex contact surface is manufactured to have an increased friction.

118. The ball-and-socket assembly as in Claim 117 wherein said convex contact surface has a coating comprising a granular material.

119. The ball-and-socket assembly as in Claim 118 wherein said granular material is selected from the group consisting of silica, tungsten carbide, and aluminum oxide.

120. The ball-and-socket assembly as in Claim 110 wherein said resilient mechanism is a wave spring.

121. The ball-and-socket assembly as in Claim 103 wherein said ball is a termination ball, said termination ball having a flattened base portion on one end, a convex contact surface on an opposite end, a bore extending through said termination ball from said one end to said opposite end, and a cable guide positioned within said bore, said base portion having a fastening mechanism therein to fasten said termination ball to a structure.

122. The ball-and-socket assembly as in Claim 121 wherein said structure is said flat panel display.

123. The ball-and-socket assembly as in Claim 103 wherein a ball stop located on one of said first or second annular plunger limits ball tilt to approximately 15 degrees off of center.

124. The computer controlled display device of Claim 103 wherein said tension device is a cable having a proximal end coupled with said actuator and a distal end coupled with a termination ball.

125. The computer controlled display device of Claim 103 wherein said force is approximately 200.0 to approximately 400.0 pounds.

126. The computer controlled display device of Claim 92, further comprising:
a moveable base coupled with said moveable assembly to support positioning of
said moveable assembly and said flat panel display.

127. The computer controlled display device of Claim 126 wherein said moveable base houses computer components comprising a microprocessor, a memory, a bus, an I/O (input/output) controller, and an I/O port, wherein said microprocessor is coupled to said input of said flat panel display.

128. The computer controlled display device of Claim 127 wherein said moveable base acts as a counterweight relative to said moveable assembly and to said flat panel display.

129. The computer controlled display device of Claim 103 wherein said actuator is attached to flat panel display.

130. The computer controlled display device of Claim 129, wherein said actuator is electronically actuated.

131. The computer controlled display device of Claim 129, wherein said actuator is electromagnetically actuated.

132. The computer controlled display device of Claim 103 wherein said tension device is a cable having a fixed path length.

133. The computer controlled display device of Claim 103 wherein said actuator assembly comprises:

a tongue;

a crank coupled with said tongue, said crank having a detachable handle;

a strut coupled with said crank; and

a spring shaft coupled with said strut and with a resilient mechanism.

134. The computer controlled display device of Claim 133 wherein said resilient mechanism is selected from the group consisting of a piston and a spring.

135. The computer controlled display device of Claim 133 further comprising;
an actuator housing to house and to support said tongue, crank, strut, and spring shaft.

136. The computer controlled display device of Claim 133 wherein said resilient mechanism provides a restoring force of approximately 200 pounds.

137. The computer controlled display device of Claim 133 wherein at least one component of said actuator assembly comprises a material selected from the group consisting of aluminum, stainless steel, plastic, and ceramic filled plastic.

138. The ball-and-socket assembly as in Claim 109 wherein said data cable runs through a said off-center portion of said interior cable guide.

139. The ball-and-socket assembly as in Claim 138 wherein said cable to display data has a length approximately 20% longer than a fixed path length of said moveable assembly, said fixed path length measured from an exterior portion of said flat panel display to an exterior portion of a support structure coupled to said moveable assembly.

140. The ball-and-socket assembly as in Claim 109 wherein said anti-torsion device is a looped cable running through a said off-center portion of said interior cable guide.

141. The ball-and-socket assembly as in Claim 140 wherein said looped cable has a length approximately 20%-30% longer than a fixed path length of said moveable assembly, said fixed path length measured from an exterior portion of a display termination socket located on a first end of said moveable assembly to an exterior portion of a base termination ball located on a second end of said moveable assembly.

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142. A computer controlled display system, comprising:

a flat panel display having a display surface and an input for receiving display data to be displayed on said display surface;

a moveable assembly coupled mechanically to said flat panel display, said moveable assembly having a cross-sectional area which is substantially less than an area of said display surface, said moveable assembly being moveable to allow said flat panel display to be selectively positioned in space relative to a user of said computer controlled display system; and

a base coupled mechanically to said moveable assembly and to said flat panel display through said moveable assembly, said base housing computer components comprising a microprocessor, a memory, a bus, an I/O (input/output) controller, and an I/O port, wherein said microprocessor is coupled to said input of said flat panel display.

143. A system as in claim 142 wherein said base houses computer components further comprising an optical drive and a network interface and wherein said cross-sectional area is defined by a cross-section taken perpendicularly to a longitudinal dimension of the moveable assembly.

144. A system as in claim 143 wherein said moveable assembly is moveable such that said flat panel display has at least three degrees of freedom of movement.

145. A system as in claim 143 wherein said system is moveable as a unit by one person unaided by any assistance.

146. A system as in claim 145 wherein a weight of said system is less than about 40 lbs and a footprint size of said base is less than about four (4) square feet.

147. A system as in claim 143, further comprising:

an actuator attached to said flat panel display and coupled to a force generator which maintains said moveable assembly in a rigid mode when said actuator is in a first state and which allows said moveable assembly to be moveable when said actuator is in a second state.

148. A system as in claim 147 wherein said force generator is a mechanism which may be electronically or electromagnetically activated to change said first and second states of said moveable assembly

149. A system as in claim 147 wherein said actuator, through a single actuation of said actuator, allows simultaneous positioning in multiple degrees of freedom (of said flat panel display).

150. A system as in claim 143, further comprising:

a data cable coupled to said input of said flat panel display at a first end of said data cable and coupled to a display controller housed within said base, said data cable being disposed within said moveable assembly.

151. A system as in claim 150 wherein said data cable is concealed within said moveable assembly.

152. A system as in claim 143, further comprising:

an anti-torsion cable coupled to said moveable assembly, said anti-torsion cable restraining said flat panel display from being rotated beyond a pre-determined amount.

153. A system as in claim 143 wherein said longitudinal dimension of the moveable assembly extends from said flat panel display to said base and wherein a weight of said system is less than about 25 lbs and a footprint size of said base is less than an area of about 500 square centimeters.

154. A system as in claim 153 wherein said base is not fixedly secured to a supporting surface under said base.

155. A system as in claim 147 wherein said moveable assembly stores potential energy in a tensioned tension cable and in a plurality of compressed resilient members when said actuator is in a first state.

156. A system as in claim 147 wherein said actuator stores potential energy in a compressed spring/piston assembly when said actuator is in a second state.

157. A system as in claim 147 wherein moving said actuator from a first state to a second state converts potential energy stored in a tensioned cable and in a plurality of compressed resilient members and mechanical energy provided by a user into elastic potential energy stored in a compressed spring/piston assembly.

158. A system as in claim 157 wherein moving said actuator from a second state to a first state transfers a portion of the elastic potential energy stored in a compressed spring/piston assembly into elastic potential energy stored in a tensioned tension cable and in a plurality of resilient members, and converts the remaining stored elastic potential energy to work done on the use and to kinetic energy of the actuator.

159. A method, comprising:

storing a first potential energy in a tension cable extending through a longitudinal interior portion of a moveable assembly having a first end attached mechanically to a flat panel display and a second end attached to a moveable base, said moveable assembly having a plurality of moveable portions;

storing a second potential energy in a plurality of resilient members corresponding to said plurality of moveable portions, wherein said resilient members are compressible and coupled with said plurality of moveable portions;

combining a portion of said first potential energy and a portion of said second stored potential energies with an applied mechanical work;

converting a portion of said stored energy and work to an elastic potential energy; and

storing said elastic potential energy in a force generator which maintains said moveable assembly in a rigid mode when said force generator is in a first state and which allows said moveable assembly to be moveable when said force generator is in a second state.

160. The method of Claim 159 wherein combining a portion of said first potential energy and a portion of said second potential energy, further comprises:

moving an actuator attached to said flat panel display from a first actuator state which maintains said moveable assembly in rigid mode to a second actuator state which allows said moveable assembly to be moveable.

161. The method of Claim 159 wherein said force generator is a spring assembly.

162. The method of Claim 159 wherein said force generator is a piston assembly.

163. A method, comprising:

transferring a portion of an elastic potential energy stored in a force generator which maintains said moveable assembly in a rigid mode when said force generator is in a first state and which allows said moveable assembly to be moveable when said

force generator is in a second state into a first potential energy and a second potential energy;

storing said first potential energy in a tension cable extending through a longitudinal interior portion of a moveable assembly having a first end attached mechanically to a flat panel display and a second end attached to a moveable base, said moveable assembly having a plurality of moveable portions; and

storing a second potential energy in a plurality of resilient members corresponding to said plurality of moveable portions, wherein said resilient members are compressible and coupled with said plurality of moveable portions.

164. The method of Claim 163 wherein transferring a portion of the elastic potential energy stored in a force generator, further comprises:

moving an actuator attached to said flat panel display from a second actuator state which allows said moveable assembly to be moveable to a first actuator state which maintains said moveable assembly in a rigid mode.

165. The method of Claim 164 wherein said force generator is a spring assembly.

166. The method of Claim 164 wherein said force generator is a piston assembly.

167. A computer controlled display system, comprising:

Spec claim 167
a flat panel display having a display surface and an input for receiving display data to be displayed on said display surface;

a moveable assembly coupled mechanically to said flat panel display, said moveable assembly having a cross-sectional area which is substantially less than an area of said display surface, said moveable assembly being moveable to allow said flat panel display to be selectively positioned in space relative to a user of said computer controlled display system;

a base coupled mechanically to said moveable assembly and to said flat panel display through said moveable assembly, said base housing computer components comprising a microprocessor, a memory, a bus, an I/O (input/output) controller, and an I/O port, wherein said microprocessor is coupled to said input of said flat panel display;

a holder device coupled with said moveable assembly, said holder device having an energy stored therein; and

an actuator coupled to said holder device, said actuator to change a state of said moveable assembly to permit movement of said moveable assembly, wherein said actuator is assisted in said change of state by said energy stored in said holder device.

168. The system of claim 167 wherein said energy reduces an amount of user force needed to change said state of said moveable assembly.

169. The system of claim 167 wherein said actuator is attached to said flat panel display and wherein said actuator, through a single actuation of said actuator, allows simultaneous positioning in multiple degrees of freedom (of said flat panel display).

170. A system as in claim 167 wherein said base houses computer components further comprising an optical drive and a network interface, and wherein said cross-sectional area is defined by a cross-section taken perpendicularly to a longitudinal dimension of the moveable assembly.

171. A system as in claim 167 wherein said system is moveable as a unit by one person unaided by any assistance.

172. A system as in claim 167 wherein a weight of said system is less than about 40 lbs and a footprint size of said base is less than about four (4) square feet.

173. A system as in claim 167, further comprising:

a data cable coupled to said input of said flat panel display at a first end of said data cable and coupled to a display controller housed within said base, said data cable being disposed within said moveable assembly.

174. A system as in claim 173 wherein said data cable is concealed within said moveable assembly.

175. A system as in claim 167, further comprising:

an anti-torsion cable coupled to said moveable assembly, said anti-torsion cable restraining said flat panel display from being rotated beyond a pre-determined amount.

176. A system as in claim 167 wherein said longitudinal dimension of the moveable assembly extends from said flat panel display to said base and wherein a weight of said system is less than about 25 lbs and a footprint size of said base is less than an area of about 500 square centimeters.

177. A system as in claim 176 wherein said base is not fixedly secured to a supporting surface under said base.

178. A computer controlled display system, comprising:

a flat panel display having a display surface and an input for receiving display data to be displayed on said display surface;

a moveable assembly coupled mechanically to said flat panel display, said moveable assembly having a cross-sectional area which is substantially less than an area of said display surface, said moveable assembly being moveable to allow said flat panel display to be selectively positioned in space relative to a user of said computer controlled display system;

a base coupled mechanically to said moveable assembly and to said flat panel display through said moveable assembly, said base housing computer components comprising a microprocessor, a memory, a bus, an I/O (input/output) controller, and an I/O port, wherein said microprocessor is coupled to said input of said flat panel display;

and

a counter-balancing spring assembly housed within said moveable assembly, said spring assembly having a proximal end coupled with a biscuit of a display mounting assembly and a distal end coupled with a biscuit of a base rotation assembly.

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179. The system of claim 178 further comprising:

a compression link housed within said moveable assembly, said compression link having a proximal end coupled with the biscuit of the display mounting assembly and a distal end coupled with the biscuit of the base rotation assembly.

180. The system of claim 178 wherein the moveable assembly further comprises:

a first canoe having a proximal end and a distal end coupled with a corresponding second canoe having a proximal end and distal end.

181. The system of claim 178 wherein the spring assembly further comprises:

a spring core having a proximal end, a distal end, a top surface, a bottom surface, and side surfaces, the spring core having a pair of channels running longitudinally along its side surfaces and having an annular flange formed at said proximal end to mate with a first end of a spring, wherein the spring core is slidably disposed within an interior of the spring;

a pair of spring struts having corresponding proximal ends and distal ends, said proximal ends each containing a bore therethrough, and bowed outward to form a pair of forked members defining a channel therebetween, said distal ends each having an

outwardly flared portion to mate with a second end of the spring, wherein the pair of spring struts is disposed within said corresponding pair of channels; and
a corresponding pair of glide bearings coupled with said pair of spring struts.



182. A system as in claim 181 wherein said base houses computer components further comprising an optical drive and a network interface and wherein said cross-sectional area is defined by a cross-section taken perpendicularly to a longitudinal dimension of the moveable assembly.

183. A system as in claim 182 wherein said system is moveable as a unit by one person unaided by any assistance

184. A system as in claim 178, further comprising:

a data cable coupled to said input of said flat panel display at a first end of said data cable and coupled to a display controller housed within said base, said data cable being disposed within said moveable assembly.

185. A system as in claim 178 wherein said base is not fixedly secured to a supporting surface under said base.

186. A system as in claim 178 wherein said base has a toroidal shape.

187. A system as in claim 178 wherein said base has a square shape.

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Sub 1* 188. A system as in claim 178 wherein said base has a pyramidal shape.

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